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ABSTRACT

A study examined students' metacognitive response to ambiguous literacy tasks to determine the relationship between that response and academic achievement. Subjects were 11 students chosen from a fifth-grade classroom in a small, urban school serving a predominantly black, middle class neighborhood. Two literacy tasks were identified as ambiguous: (1) weekly spelling assignments; and (2) daily reading assignments. Data were collected by means of observer notes, copies of task products, end-of-unit test grades, composite spelling story grades, and structured interviews with the subjects. Results revealed three levels of metacognitive plans for completing ambiguous literacy tasks which appeared to represent a depth dimension of difference among students. The highest level, labeled "Rich Metacognitive Plans," was distinguishable from other plans by elaborated ideas and language and by indications that the students who articulated such plans seemed to have the "big picture" of both the intent and the whole of the task itself. "Simple Metacognitive Plans" were characterized by responses that were flatter, with fewer details and alternatives for completing the task, while "Undefined Metacognitive Plans" occurred in response to the spelling story task only. Results also revealed an additional dimension of functionality--the degree to which the plans seemed to work. Grade achievement in spelling and reading were highly consistent with quality and depth of students' metacognitive plans for task completion. (Two tables of data are included.) (KEH)

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# STUDENTS' METACOGNITIVE RESPONSE TO AMBIGUOUS LITERACY TASKS

## Metacognitive Response to Ambiguity

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# STUDENTS' METACOGNITIVE RESPONSE TO AMBIGUOUS LITERACY TASKS

Students' ability to cope in the classroom is dependent in some degree on how skillfully they are able to respond to ambiguous classroom tasks ( Murphy, 1988; Cambourne & Turbill, 1987; Doyle & Carter, 1984). Whether ambiguity is intended or unintended, students generally disambiguate classroom tasks in one of two ways: 1) by reducing tasks to low-level, rote assignments (Doyle & Carter, 1984; Haggard, 1989), or 2) by redefining, or reconstructing, the task itself (Murphy, 1988; Haggard, 1989). A growing body of research supports these findings; however, an aspect of student response to ambiguity relatively unexplored is whether or not students develop strategies, or "scaffolding" (Graves, 1983), to support them during the times of cognitive uncertainty created by ambiguous tasks. Such scaffolding could be thought of as students' metacognitive plans - plans which mediate between students' prior knowledge base and the agreement negotiated (between students and teacher) of what constitutes the task goal (Hoffman, 1989). Further, some relationship would seem to exist between metacognitive plans or strategies and students' overall success in the classroom.

The purpose of this study was to examine students' metacognitive response to ambiguous literacy tasks, and to explore the relationship between that response and academic

achievement. The study continues work reported earlier (Haggard, 1989) which examined student response to two ambiguous literacy tasks - writing stories comprised of weekly spelling words, and writing answers to open-ended reading assignment. The first study also examined whether or not students had, and could articulate, plans or strategies for responding to ambiguous literacy tasks. That analysis suggested that they did, indeed, have such plans and were able to articulate them; three levels of metacognitive response to ambiguous literacy tasks were found, distinguishable by: 1) clarity of goal and plan definition, 2) extent of representation of declarative and procedural knowledge, and 3) explicitness of reference to task elements. Although no relationship was found between metacognitive response and achievement test scores, some relationship appeared to exist between metacognitive response and letter grade achievement.

The current study focuses more closely on the content of the students' plans for responding to ambiguous literacy tasks rather than whether or not such plans exist, and explores the relationship of these plans to academic success. Specifically, this study examines students' metacognitive plans to determine 1) what differences can be found in the quality of student plans for completing ambiguous literacy tasks, and 2) what relationship exists between metacognitive response to ambiguous literacy tasks and academic achievement.

## Method

The study was conducted in a small, urban school serving a neighborhood of predominantly Black, middle class families. Subjects were eleven students in a fifth-grade classroom in which the investigator was a participant observer one morning a week for fifteen weeks. In this classroom, 29 children were Black and 3 were White. Two literacy tasks were identified as ambiguous:

Weekly spelling assignments - a standing assignment in the classroom each week was for students to write a story using all of their spelling words. These were read aloud in class and submitted for grading.

Daily reading assignments - the class was reading The Lion, the Witch and the Wardrobe (Lewis, 1950) using the study guides developed by the Clovis School District. Students wrote answers to the comprehension questions which were shared in various ways. No grades were attached to the written answers.

Data collected for these tasks included detailed observer notes, copies of task products, end-of-unit test grades for The Lion, the Witch and the Wardrobe, composite spelling story grades, and structured interviews with the students. Interviews lasted approximately 30 minutes, and included the following questions: 1) How do you go about writing stories with your spelling words? and 2) How do you go about answering reading guide questions? All interviews were transcribed into written protocols.

## Results

Analysis of student interview protocols yielded three levels of metacognitive plans for completing ambiguous literacy tasks - Rich, Simple, and Undefined (see Table 1) - which appear to represent a **depth** dimension of difference between students. Analysis of these metacognitive plan levels and examination of spelling assignments and reading test grades yielded an additional dimension of **functionality** - the degree to which the plans seemed to work. Table 1 summarizes interview protocol analyses. This Table reflects a deeper analysis of the data used in Study I to determine whether or not students had a plan for responding to ambiguous literacy tasks; cell Ns have changed as the result of the more detailed examination of these protocols and the expanded definitions for each level of response in the current study.

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Insert Table 1 About Here

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### Depth of Metacognitive Plans

The highest level of metacognitive planning was labeled "Rich Metacognitive Plans" (RMPs) for the full, extended, and robust qualities of the plans; they are distinguishable from other plans by elaborated ideas and language, and by indications that the students who articulate such plans seem to have the Big Picture of both the intent and the whole of the task itself. RMP

students appear to possess a type of poise that allows them to maintain control over final task goals while they simultaneously grapple with internal task details. Further, these students appear to be "with it," to have a certain worldliness, or awareness of much that is around them. Examples of spelling and reading RMPs follow.

RMP Spelling Story Task Protocols (from the question, "How do you go about writing stories with your spelling words?"):

S1: Well, first, you have to think a bit, get all your thoughts together, kinda say the story in your mind first before you can put it down on paper so you'll know what to put. . . think how the words would fit together - make a good story. . .it doesn't have to be true, but a story that makes sense.

I: Do you ever find it hard to do that?

S1: A lot of times.

I: Why?

S1: Because sometimes. . . you may have a story that you really like using, just let's say, 1/4th of the words, and the other words might not fit into the story, but you have to find some way to fit those words in there.

I: And so what do you do?

S1: I have to think, erase, rewrite, think again, and finally have down my rough draft, my whole story. And then I have to recopy it over - correct it - then recopy it over.

* * * * * * *

S2: Okay, it's just, like, first you've gotta think over all the words and see how they would fit into a sentence, and then try to fit the sentences to a story. Then, if it doesn't work, you have to change it all around and add endings and prefixes and affixes.

I: Um-hmm.

S2: And then, . . . it's like, probably a long process, because you've gotta think it over, and see if you use affixes, and then sentences are easier, because I can put almost all of these words into about two sentences.

RMP Reading Comprehension Task Protocols (from the question, "How do you go about answering your reading guide questions?"):

S1: Well, . . . I know I'm going to get the questions, so I read carefully. . . .And then I just brainstorm what I have read, the main ideas in the chapter - whatever - write it on a piece of paper, and then answer the questions.

I: What do you do when you come to a hard one? How do you handle that?

S1: Skip it first, and then sometimes if we're allowed to take it home, I do that, because I can concentrate more at home because it's quieter.

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S2: Well, we discussed it with our groups. If you read the story, you'll know it, like if you read it good without rushing through.

I: Were any of those questions ever hard for you?

S2: Yeah. Especially the application ones [reading from comprehension question sheet], 'Is there a witch in another story that reminds you of the white witch?' I don't read witch stories; I read a lot of Agatha Christie, but not witch stories.

I: What did you do when you had a question like that?

S2: Well, I'd think, 'Well, my friend Janie read a story about a witch. I could just put that down and I could think of some things she told me about it,' so I think of some things, put that down and say I read it.

I: So you just sorta make stuff up. Why do you do that?

S2: Because otherwise I wouldn't be able to answer the question. . . If I've read a book about a witch, which I don't remember that I have - I probably have sometime, then I'd put that down, but I haven't.

* * * * * * *

S3: I'll answer them as best as I can by myself, and if I can't answer them by myself, then I'll go and look. First, I'll have some answer in my mind . . . and then I'll look in there to see if I was right or wrong.

The second level of metacognitive plans, labeled Simple Metacognitive Plans (SMP), is characterized by responses that are flatter, with fewer details and alternatives for completing the task than found in RMPs. SMP students use somewhat restricted

language to describe their plan, and appear to concentrate on task parts rather than the whole. Their approach is more additive than sequential; task completion occurs when all parts are used up. When fail-safe alternatives are mentioned, they usually involve dependent rather than independent problem-solution behaviors. Sample spelling and reading SMP protocols follow.

SMP Spelling Story Task Protocols (from the question, "How do you go about writing stories with your spelling words?"):

S1: I just think about it for awhile, and then I just write it. I look around and see if I can find something to write about. . . . I look around and I find something, like, if the word is 'crumb,' I found, like a story about crumbs and I use all these words.

* * * * * * *

S2: I find some words as easy as I can, then I write 'em all down, and then I see what I can do with the words and then I use them in sentences, and then put the sentences together.

I: Into a story?

S2: Um-hmm.

I" When you 'find some words as easy as you can,' . . . how does that help you?

S2: That helps me, like, say, the second word was 'captain,' then I put 'captain' down and then use it in a sentence. . . and then I use a few words in that sentence plus 'captain,'

and then I put that in the story.

I: I see. How do you get all your spelling words in there?

S2: I don't know. I just do it.

SMP Reading Comprehension Protocols (from the question, "How do you go about answering your reading guide questions?"):

S1: When I read the story, it gave the idea, like when you have questions, all you do is go back to the book.

I: Were there ever times when these questions were hard for you?

S1: Sometimes I couldn't answer questions, because sometimes it was hard questions [sic].

I: So what did you do?

S1: I asked the teacher.

* * * * * * *

S2: Our teacher gives us these [points to study guide] and I'll answer the questions.

I: How do you answer the questions? What do you do to get these questions answered?

S2: Like, say, if I'm not sure, I'll just go back in the book and read it.

I: What do you do when you come to a hard one?

S2: I'll ask someone for the answer.

The third level of metacognitive plans, Undefined Metacognitive Plans (UMPs), occurred in response to the spelling story task only. They are so minimal as to qualify, almost, as

being "un-plans;" however, some degree of planning, focus and direction are present. Ideas and language are quite restricted; few details and alternative actions are enumerated; plans demonstrate incomplete or no notion of overall task goal. UMP spelling interview protocols follow.

UMP Spelling Story Protocols (from the question, "How do you go about writing stories with your spelling words?"):

S1: I just use them.

I: How do you do it?

S1: Umm-umm ["I don't know" intonation] . . . . I just think of something and whatever I think of, I write the name of the story down, and then I write the story.

* * * * * * *

S2: I don't know . . . . It just comes up.

I: How does it do that?

S2: [Silence]

I: What do you do? How do you start?

S2: Like, I'll say, 'One midnight - uh," [silence]. I don't know.

Functionality of Metacognitive Plans

Table 2 summarizes students' composite grade ranges for spelling story assignments and end-of-unit test grades for The Lion, the Witch and the Wardrobe. Weekly spelling story grades were not available for all students for all weeks during the semester; those grade which were available were examined to

determine the range of achievement for each student - that is, what grade students generally made. The result of this analysis yielded the composite grade ranges. Test grades were converted from the district E-G-S-N-U scale to the more universal A-F scale.

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Insert Table 2 About Here

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With few exceptions, grade achievement in spelling and reading are highly consistent with quality and depth of students' metacognitive plans for task completion. RMPs tend to be associated with high grades; SMPs are almost evenly divided between satisfactory and unsatisfactory grades, and UMPs are associated only with poor or failing grades. The reading test grades are, admittedly, an indirect measure of task success; nevertheless, they correspond very closely to spelling assignment grades which were achieved from the story writing task. At the very least, they provide support for the those grades; assuming some connection between the reading comprehension task and the end-of-unit test, they provide a measure of the functionality of students' plans for task completion.

One variable of functionality may distinguish the RMP students' metacognitive plans from others' and, at the same time, account for RMP students' academic success. This variable is the amount of self-monitoring the RMP plans contain: erasing,

rewriting, thinking, correcting to get more words in a story; adding endings, prefixes, and affixes to make words fit; knowing in advance that questions will be asked, and reading carefully as the result of that knowledge; jotting down what one remembers immediately after reading; making up responses that meet task requirements when one's own experiences do not; having an answer in one's mind before checking the book "to see if I was right or wrong." This type of monitoring is replete in the Rich metacognitive plans; by contrast, it is rare or completely absent from Simple and Undefined metacognitive plans.

## Discussion and Conclusions

Results of this study suggest that a strong relationship exists between the depth and functionality dimensions of students' metacognitive plans for completion of ambiguous literacy tasks. RMP protocols and corresponding assignment and test grades indicate that these students know what the reading and spelling tasks in their classroom are all about, and that the students have well developed, functional strategies for getting the jobs done. For reading, the task (i.e., the Big Picture) is to manipulate ideas about the story, whether from one's own recall and interpretation or from outside and imaginary sources. Even when the task involves information directly from text - being "right," or remembering the main idea - there is, nevertheless, a clear focus on <u>constructing</u> an answer, as opposed simply to copying something from the book. For spelling, the

task involves two major components: story writing and word-fitting-in. RMP students focus on writing stories that make sense, even though few of the stories actually did (Haggard, 1989), and take the time to conceptualize a theme or an idea before they begin writing. Then adjustments ("endings, prefixes and affixes;" "erase, rewrite, think again") are made to achieve the fitting-in requirement. This supports the earlier finding (Haggard, 1989) that the nonsensical products of the spelling task were tolerated by students and teacher alike precisely because they were viewed as a "special kind of writing task" in which the need to fit in all the words overrode the need to make sense. For both reading and spelling, RMPs are strikingly successful. With only one exception, spelling and reading grades were in the superior range for this group; it appears that the complex, sequential, extended, and elaborated plans of RMP students, with built-in monitoring and fail-safe alternatives, are highly useful in achieving good grades.

SMP protocols suggest that simple metacognitive plans are not as fully useful, or perhaps reliable, as are RMPs. Two variables may account for this. First, SMP students appear to have an incomplete sense of what the tasks are all about, and to focus on one aspect of the task to the exclusion of all others. SMP students know that using spelling words is important, and so they simply start with a word and begin to build sentences, moving in a linear, additive manner toward completion. Little

concern for story or story structure occurs in their plans. They rarely use prewriting time to conceptualize or plan, and when they do, the planning is relatively unfocused and vague (". . .I see what I can do with the words"). Virtually all of the SMP plans for completing the reading task are confined to finding and writing down answers from the book; the task is evidently viewed as one of locating and copying answers rather than manipulating ideas to construct responses to the questions.

Second, SMPs contain few, if any, references to self-monitoring, regulation, or adaptive fail-safe strategies. Students "don't know how" they fit spelling words in, they "just do;" reading questions that are difficult are completed by asking the teacher or someone else for the answer. Within their strategies for task completion, SMP students articulate no rethinking, no alternative plans, no place to go when the original, vaguely defined plan fails. It appears that the original plans work about half the time.

UMP protocols and related grade achievement in spelling suggest that these students have little, if any, understanding of task demands, and are unable to formulate a functional approach for successful task completion.

This study supports Baker and Brown's assertion (1984) that metacognitive acts involve two separate components: 1) awareness of what skills, strategies and resources are needed to perform the task; and 2) ability to use the self-regulatory mechanisms of

checking, planning, evaluating, testing, revising, and remediating. These two components correspond closely to the depth and functionality dimensions of metacognitive plans found here. These dimensions, and their interrelationship, are also highly similar to Ruddell and Speaker's notion of the critical relationship between goals, plans and monitoring systems in learning (1985).

A striking finding of this study was the high incidence of self-regulatory elements in the Rich metacognitive plans, and near absence of these in the Simple and Undefined plans. McCaslin (1989) highlights the importance of self-involved and task-involved inner speech which allow students to manipulate and transform tasks as they work toward task completion. Of possibly major importance in the development of useful plans is first, the willingness and ability of students to accept the complexity of ambiguous tasks, and second, the internalization of self- and task-involved language to allow "fluidity of adaptive inner speech for handling a variety of difficult tasks" (McCaslin, 1989).

Further research is needed to understand students' metacognitive planning. This research should include think-alouds and audio/video taping of students engaged in completion of ambiguous literacy tasks as well as indirect research methods (cf. Harris, 1989) and the retrospective, observational, and task product collection methods and used here. Further, it should

involve real collaboration with classroom teachers at a variety of grade levels in which researcher and teacher carefully, and cooperatively, construct various types of ambiguous literacy tasks and examine how students approach and complete each. Such research should increase considerably our understanding of how students construct meaning in the classroom - how they plan and carry out functional strategies for literacy task completion, and yield greater insight into the complex interaction between teachers' and students' conceptions of task parameters and demands.

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Table 1

Number of Student Responses to Three Levels of Metacognitive Plans

| | Spelling Stories | Reading Questions |
|---|---|---|
| Level I - Rich Metacognitive Plans<br><br>Contain 1) clearly defined goal and full, robust, extended plan; 2) elaborated language; 3) elements representing declarative and procedural knowledge (i.e., focus on meaning and making sense and precise statement of procedural sequence - "First. . .then. . .and then," etc.); and 4) explicit reference to task elements (e.g., "words," "sentences," "questions," "reading").<br><br>Have multiple dimensions, lots of depth, and frequently include fail-safe alternative(s)<br><br>Are almost always functional, and almost always lead to success | 5 | 5 |
| Level II - Simple Metacognitive Plans<br><br>Contain 1) vaguely defined, general plan with little explicit or implicit reference to the goal; 2) few, if any, elements representing declarative and procedural knowledge (i.e., few or no references to meaning or making sense; little or no statement of procedural sequence; 3) restricted language, and 4) no explicit reference to task elements.<br><br>Tend to be one-dimensional, with little depth and limited mention of fail-safe alternatives.<br><br>May or may not be functional, and may or may not lead to success. | 4 | 6 |
| Level III - Undefined Metacognitive Plans<br><br>Contain 1) few, if any, statements referring to a goal or a plan; 2) no elements representing declarative and procedural knowledge; 3) restricted language, and 4) no explicit reference to task elements.<br><br>Are one-dimensional, with little depth and no mention of fail-safe alternatives.<br><br>Rarely are functional, and rarely lead to success. | 2 | 0 |

Table 2

Spelling and Reading Grades Achieved by Students in Rich, Simple and Undefined Metacognitive Plan Levels

| | SPELLING Composite Grade Ranges | READING End-of-unit Test |
|---|---|---|
| RMP | A/B = 5 | A = 4<br>D = 1 |
| SMP | B/C = 2<br>D/F = 2 | C = 2<br>F = 3<br>no grade = 1 |
| UMP | D/F = 2 | ----- |